

An interesting account of the Caribs of Dominica follows. They have allotted to them a reservation extending from Mahoe River to Crayfish River, a distance of about three miles along the Atlantic coast and away back into the mountains as far as they please to cultivate. Though each family has a little garden near the house, all the "provision grounds," where staple articles of food are grown—yams, sweet potatoes, cassava, bananas, and taro—are at a distance from the houses, some even two miles away—solitary openings made in the depths of the high woods. The Caribs are especially interesting as being the earliest American savages met with by Columbus, the original "cannibals," and the race to which Caliban and Man Friday belonged. They seem somewhat addicted to drinking now, for the author describes the old King George the Third as seen tottering towards the plantation with a sovereign he had earned in his hand to spend it in rum. A lot of drunken Caribs tried to break into the author's house one night for amusement, and not being able to do that, poked a lot of fireflies in at the cracks to light up the inside, and see for certain whether he was at home—a very neat way of lighting up an interior. The general account of the Caribs is well worth reading.

We cannot follow the author in his exciting hunt after the souffrière bird, which lives only about the crater of the island of St. Vincent. The wary bird when at last procured proved to be of a new species, *Myadestes sibilans*. In Antigua he was victimised by the well-known "jigger." "I awoke one morning with an itching of my toes, which frequent rubbing failed to allay, and examination revealed four white tumours. They were as large as peas, and in the centre of each was a little black speck. I called my boy William, who at once pronounced them jiggers." The first old negress passing was called in, and turned them out of their nests with an adroitness which showed long practice. "A few hours are sufficient to give the jigger a hiding-place, and as the sensation he causes is a rather pleasant itching only for a time, he is sometimes not discovered till a painful sore is formed."

At Dominica the author met with Dr. Miroy, a friend and correspondent of Sir Joseph Hooker, and who is endeavouring, through the aid of the Kew establishment, to re-introduce the cultivation of coffee into the island. He is cultivating Liberian coffee, in the hope that it will prove able to withstand the attacks of blight which ruined the former crops forty years ago.

In Grenada the author hunted the monkeys which abound there as at St. Kitts, having been of course introduced, and having run wild, as explained in a series of letters in NATURE some months ago. He could not, however, make up his mind to shoot one when it came to the point. The monkeys are a great pest, and do great damage to the cultivator, just as in St. Iago, Cape Verde Islands, on the other side of the Atlantic, where also they were doubtless introduced, though it is not as yet known what the species is.

The book ends with an account of an ascent of the Guadeloupe Souffrière. It is throughout entertaining and highly amusing, but the author is evidently not very deeply versed in natural history, and there is often to be noted a lack of precise information, as in the case, for example, of the crayfish, cited above. The account of the land-crabs is somewhat conflicting. At one place we read of a

mother-crab, with 100 tiny young, found far up in the mountains, at another, where the author falls in with an army of land-crabs on their combined march to the sea; he tells us that they bury their eggs under the sand, where they are hatched, and soon after millions of the new-born crabs are seen quitting the shore and slowly travelling up the mountains.

The story which he tells of the habits of the huge Hercules beetle, *Dynastes hercules*, can hardly be accepted as it is by the author on the authority of his dusky guide. It is that the male beetle seizes a small branch of a tree between its enormously long nippers and buzzes round and round the branch till this is cut off, producing a knife-grinding sound, supposed by the author to be a sexual call. He heard a knife-grinding noise indeed, but he did not see the rotating beetle. We recommend the book to all our readers.

---

*A NEW ENGLISH TEXT-BOOK OF BOTANY*  
*An Elementary Text-book of Botany.* Translated from the German of Prof. K. Prantl. Revised by S. H. Vines, M.A., D.Sc., F.L.S. (London: Sonnenschein and Allen, 1880.)

THIS text-book, we are informed in the English preface, "was written by Prof. Prantl, to meet a growing demand for a work on botany, which, while less voluminous than the well-known work of Sachs, should resemble it in its mode of treatment of the subject, and serve as an introduction to it." While we already have in English many text-books for students, one indeed almost professedly taking the same line as this, every teacher must have felt how inadequately they supply the needs of the class for which they have been written. Most are new editions of books written first twenty years ago or more, and suffer from the impossibility of introducing those new facts which have so deeply modified our present standpoint, without damaging the symmetry and unity of a well-written work; and others, of more recent origin, are badly compiled or over-concentrated. The book before us, avoiding these faults, will unquestionably take a high place at once; for though using Sachs as his storehouse, the author has digested the strong meat of the big book, and here provides his readers with the milk suited to their years. Moreover, the book is singularly well-balanced in all its parts, and clearly-written throughout. The translation is so flowing that no reader unformed of the fact would guess that German was the original dress; and Mr. Vines has added to the value of the work by appending a table, in which the classification there adopted is compared with that of Bentham and Hooker.

A reference to those knotty points to which one always looks at once as tests of successful treatment has proved so satisfactory that it is with regret that we turn to the ungracious task of pointing out the deficiencies that will somehow creep into the most carefully-written books. In several points Prantl has followed Sachs too closely, so that the accounts of cell-division, of the morphology of the pollen-grain and ovule, of the growing-point of Phanerogams, are all far behind our present knowledge. Again, in the treatment of "Modes of Branching," Sachs has been followed rather than Hofmeister, who, despite his complex sentences, gives a much clearer exposition.

Thus Sachs is copied even to including the cyme in *monopodial* systems. Surely this is a contradiction in terms, and might be avoided by the use of "lateral," in contradistinction to "dichotomous." In the figures (17, 19) of uniparous cymes, Sachs, and with him Prantl, omit to mention that the diagram is taken in *plan*, a point the more important that in French and English text-books it has been usual to give such diagrams of inflorescence in *elevation*. Without noticing this, a trap is laid through which not students alone have fallen into the error of thinking that the Germans use "scorpioid" and "helicoid" in senses inverse to the usage of other botanists. Under inflorescence no mention is made of the very useful French "*Cymobotrya*" terminology, possibly through feelings of patriotism, with which, however, Englishmen are not concerned. The Elder is given as the example of a corymb; which term is, however, restricted by the best botanists to the corymbose *raceme*, of which the elder is not an example.

In the histology there are several not unimportant errors, probably Prantl's own. He says that the phloem contains both "phloem parenchyma" and "cambiform tissue"—is not phloem parenchyma always (primitively at least) cambiform? We are told (p. 51) that the vessels of secondary wood are "*invariably* provided with bordered pits;" this is far too absolute. Under collenchyma no mention is made of its commoner form, distinguished as "concave" by Vesque. Endoderm is defined as peculiar to Dicotyledons! Under "stomata" no mention is made of water-pores. The account of the structure of roots and the development of their secondary wood in Dicotyledons is hardly explicit enough, and almost demands the introduction of one or two pure diagrams; and when it is stated that rootlets arise in front of the xylem bundles of the root, mention should be made of such important exceptions as Umbellifers and Grasses.

The physiology proper is singularly well treated, though perhaps with too great a fear of detail. Thus no sufficient account is given of the *vis a fronte* and the *vis a tergo*, which lead to the movements of the rising sap.

A few little mistakes have been left uncorrected in the systematic part. The legume is stated on p. 197 to occur in "all the Leguminosæ;" and while this is modified in the account of the order on pp. 278-280, a true legume is here implicitly denied to the Cæsalpinieæ! "*Replum*" is given as meaning a false-dissepiment of the Crucifers, a use unauthorised by the best systematists, and inconsistent alike with its application to the lomentaceous Leguminosæ and to its Latin signification.

The figures are good, but, as usual in English editions of foreign works, poorly printed. The worse fault of separating them widely from the text they illustrate has been avoided.

Finally, despite all trouble taken by the editor, oversights will occur in a translation. Thus *Tüllen* is given in italics without its English (?) equivalent, "tyloses," and "bracteole" is given instead of the more familiar "bractlet." But these blemishes show how good is the book in which they are the worst to be found; they have been here put forward chiefly in the hope of helping the editor in the new edition which will soon be demanded; and it is with a safe conscience that we would recommend this book as the best of its kind in the English language.

## LETTERS TO THE EDITOR

[The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts. No notice is taken of anonymous communications.]

[The Editor urgently requests correspondents to keep their letters as short as possible. The pressure on his space is so great that it is impossible otherwise to ensure the appearance even of communications containing interesting and novel facts.]

### Ocean Circulation

THE notice in NATURE (vol. xxii. p. 207) of the experimental researches of Professors Haughton and E. Reynolds on the coefficient of friction of water upon water, having concluded with the statement that "the authors of this research point out that these results tend to negative the theory of Dr. Carpenter that the phenomena of ocean-circulation are due to the greater height of the water at the equator as compared with that at the poles," I must be allowed to protest against being credited (or rather discredited) with a doctrine which is neither expressed nor implied in anything I have written on the subject.

The doctrine which I have advocated is no other than that first distinctly promulgated by Lenz in 1847, and now accepted by numerous Physicists of the highest eminence, both British and Continental; viz., that besides the *horizontal* circulation produced by the action of winds on the ocean-surface, there is a *vertical* circulation of which Polar cold is the *primum mobile*, consisting of an *underflow* of Polar water (chiefly from the Antarctic area) towards and even beyond the Equatorial zone, and a complementary *upper-flow* of Equatorial water towards the Poles.

That every part of the vast Oceanic basin in free communication with either of the Polar areas is occupied, to within the range of the surface-heating produced by insolation,<sup>1</sup> by water which has been cooled down in one of those areas, is now one of the best-established facts of Terrestrial Physics. And those who cannot find in the excess of specific gravity imparted to sea-water by Polar cold, an adequate cause for this movement of translation, are bound to account for it in some other way.

I venture to submit to the accomplished professors of Trinity College, that laboratory experiments made to determine the friction of water upon water at *sensible velocities* can scarcely prove that when the equilibrium of a great mass of water has been disturbed, there will *not* be *any* movement of translation (however slow) for its recovery. And I would suggest to them that they should rather investigate the conditions of one of those "experiments ready prepared for us by Nature," which is constantly going on in the Baltic Straits, and of which the results have been for many years past most carefully recorded by Dr. Meyer of Kiel and his associates. Four factors are there in continually varying action, viz. (1) difference of *level* between Baltic and North Sea water; (2) difference of *salinity*; (3) difference of *temperature*, mainly due to an importation of Polar water into the Skager-rack; and (4) *surface-movement* produced by wind, which may also modify the relative levels.

I am assured by Dr. Meyer that the action of each of these factors has now been so fully determined, that the effect of any combination of them can be predicted as certainly as ordinary tidal phenomena. And of the competence of small differences in specific gravity to produce movement in great bodies of water, no one who has investigated the question on the great scale seems to have the smallest doubt. This was the unhesitating conviction of the late Mr. Froude, as the result of his numerous observations on harbours, lochs, and fiords, communicating with the sea at their mouths: for he assured me that wherever the salinity of the water at their upper end is lowered by the descent of fresh water from the land, producing a slight

<sup>1</sup> The researches of Prof. Forel and his associates on the Swiss lakes clearly show that in *fresh* water the heating effect of insolation is limited to about 100 feet. In *salt* water, on the other hand—as I pointed out in my Mediterranean Report—there is a *downward convection* of heat produced by the sinking of the water made heavier at the surface by saline concentration. In the Mediterranean, where this effect is limited to a part of the year, it scarcely shows itself below 100 fathoms (600 feet); but under the Equator, where it is constant, the surface-heated stratum ranges downwards to from 300 to 400 fathoms. Beneath this depth the thermometer progressively sinks in the ocean-basin generally (the thermal condition of the North Atlantic being altogether exceptional) from 40° to 33° or thereabouts; whilst in the Mediterranean, to the deeper part of whose basin the Polar underflow has no access, the thermometer shows a uniform temperature of from 54° to 56° (according to the locality) from the surface-heated stratum to the deepest bottom (2,000 fathoms).